AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-5. (cancelled)

Claim 6. (currently amended) The method of claim 8 further including repeating one or more additional applying and drying sequence with a water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species until said multilayer thin film heterostructure ~~wherein said plurality of layers~~ includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure.

Claim 7. (previously amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer;

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate; and

repeating one or more additional applying and drying sequence with a water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species, so that a predetermined plurality of layers are built up upon said substrate, said plurality of layers including multiple trilayers having a polycationic layer/polyanionic layer/uncharged polymer layer structure.

Claim 8. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, wherein said drying steps comprise subjecting said coated substrate to a vacuum for sufficient time to effect drying of said coating layers and one of said coating layers of said bilayer is an uncharged polymer species.

Claim 9. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, wherein said drying steps comprise heating said coated substrate at a predetermined temperature for sufficient time to effect drying of said coating layers and one of said coating layers of said bilayer is an uncharged polymer species.

Claim 10. (previously amended) The method of claim 7 wherein said polycationic species are selected from the group consisting of polyethylenimine, poly(diallyldimethyl ammonium chloride), poly(allylamine hydrochloride), and poly(propylenimine) dendrimers.

Claim 11. (previously amended) The method of claim 7 wherein said polyanionic species are selected from the group consisting of poly[1-[4-(3-carboxy-4-hydroxy-phenylazo)benzene sulfonamido]-1,2-ethanediyl, sodium salt], poly(acrylic acid), poly(styrenesulfonate), poly(4-[4-({4-[3-amino-2-(4-hydroxy-phenyl)-propylcarbamoyl]-5-oxo-pentyl}-methyl-amino)-phenylazo]-benzenesulfonic acid).

Claim 12. (previously amended) The method of claim 7 wherein at least one solution further includes a surfactant and a resultant coating layer from said solution including said surfactant further includes said surfactant.

Claim 13. (previously amended) The method of claim 7 wherein at least one solution further includes a dye molecule and a resultant coating layer from said solution including said dye molecule further includes said dye molecule.

Claim 14. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, wherein one of said coating layers of said bilayer is an uncharged polymer species and said uncharged polymer species are selected from the group consisting of poly(vinylpyrrolidinone), polysaccharides, and biopolymers.

Claim 15. (original) The method of claim 6 wherein trilayer thicknesses in said polycationic layer/polyanionic layer/polyanionic layer structure are about equal.

Claim 16. (currently amended) A method of forming a multilayer thin film heterostructure comprising:

applying a solution including a first water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto a spinning substrate to form a first coating layer on said substrate;

drying said first coating layer on said substrate;

applying a solution including a second water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species onto said substrate having said first coating layer thereon to form a second coating layer on said first coating layer, said second water-soluble polymer characterized as a different material than said first water-soluble polymer; and,

drying said second coating layer on said first coating layer, so that a bilayer is built up upon said substrate, wherein at least one water-soluble polymer includes a chromophore and said chromophore is in a layer under the topmost layer.

Claim 17. (original) The method of claim 16 wherein said multilayer thin film heterostructure is a non-linear optical structure.

Claim 18. (currently amended) The method of claim 9 further including repeating one or more additional applying and drying sequence with a water-soluble polymer selected from the group consisting of polyanionic species, polycationic species and uncharged polymer species until said multilayer thin film heterostructure ~~wherein said plurality of layers~~ includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure.